

Remarks :

Applicant thanks the Examiner for his thorough case examination and submits the following amendment for allowance.

Applicant has amended all claims to define the invention more particularly and distinctly so as to overcome the technical rejections and define the invention patentably over the prior art.

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Claim Rejections – 35 USC 102

Claims 16-23 were rejected under 35 USC 102(b) as being anticipated by Young 3,512,206. Young teaches a surface cleaning pick-up head “P” for surface cleaning of roads & parking lot surfaces using recycled high volume air blower means to capture dust, light dirt & trash (col.11 & 12, line40+ and 1+). Young does not teach nor suggest the function or means of rigidly mounting a vacuum container on an incline slope with a liquid storage container congruently mounted below said vacuum container. Young does not teach nor suggest the function or means of mounting a vacuum container on an incline slope with a filter housing congruently mounted on an inclined slope to said vacuum container. Young does not teach nor suggest the function or means to accomplish earth excavation, water utility maintenance, nor drainage pipe cleaning, with water and vacuum. Young does not teach a surface cleaning means with pressurized water and vacuum. Young does not teach an articulated boom arm means with utilities and tools attached. Young does not teach a pressurized water/ vacuum surface cleaner means being articulated on a boom arm. Young does not teach or suggest a means to separate solids from liquid and to recycle the water.

Young’s (fig 1) shows a water tank 69 mounted below a vacuum container SCB. Young does not teach or suggest a relationship between the water tank and vacuum container. The water tank 69 is simply shown to be independently located below the vacuum container SCB. The water tank 69 does not give structural support to the vacuum container SCB. In (Col. 8 line 70-75 & Col 8 line 1-9) Young specifies the means and function of water as it relates to his patent. “ when the surface to be cleaned is fouled with a great deal of very dry dust and

5 the atmosphere is very dry, there may be some tendency for dust stirred up by the curtains to rise into the atmospheres. **This may be substantially eliminated by spraying atomized moisture into the circulating air. For this purpose,** an atomizing nozzle 67 is shown in Fig. 3 mounted in the pressure transition⁴⁸. A hose 68 supplies moisture to the nozzle 67 from a tank 69,”

10 **Young teaches against the use of water except to control dust. (Young Col. 12 line 1-4 “Only under extremely dry conditions and when a great deal of very fine dust is to be picked up is it desirable to spray atomized liquid through the nozzle 67”)** Even then, Young, cautions & only teaches the use of atomized water which is water diluted in air as a mist. Young obviously understands the inability of his design to process liquids but did not
15 have a solution to it.

As concerns claim 16, 17 & 18

Young does not teach a liquid storage container mounted below a vacuum container and said *liquid storage container side walls adding structural support to said vacuum container*. Young does not teach or illustrate a function of inclining a vacuum
20 container for the purpose of creating additional water storage area below the incline of the vacuum container. Young does not teach a vacuum container congruently supported by a water container. Young does not teach or illustrate the function of mounting a vacuum container at sufficient slope for it to empty by gravity.

**Applicants invention comprises a liquid storage container being rigidly mounted
25 below the incline slope of a vacuum container having a length and width said vacuum container being mounted at an inclined slope along said length of said container and sufficient to allow said solids or liquid to be emptied from said vacuum container by gravity through an access door to said vacuum container when said access door is opened along said width of said container, and further providing a liquid storage
30 container, and said liquid storage container being mounted below said incline slope of said vacuum container and wherein said liquid storage container comprises an additional step of having said liquid storage container side walls add structural support to said vacuum container,**

The large volumes of water required to emulsify and excavate earthen material would
35 clog up the Young’s blower “B”, air filter 84 and air / solids separation (col.11 line 54- col. 12 line 4 & Fig. 2, 4 & 8) means which are disposed within his vacuum container.

5 **Young teaches an air / solids separating means disposed within the debris storage area of his vacuum container.** Young does not teach an inclined filter housing that has self cleaning features due to its inclination.

10 **In contrast, the applicants mobile vacuum excavation patent teaches and comprises a filter housing means having a length and width to house air filters, said length of said filter housing being congruently mounted on an incline slope to said vacuum container, and said vacuum container adding structural support to said filter housing.** Applicants filter housing mounting means on an incline slope, facilitates self cleaning of dirt from the filters by gravity. Applicants means of congruently mounting the filter housing means to the vacuum container means, allows a minimal connecting orifice or conduit
15 between the vacuum container & filter housing.

20 Young depends on a large volume of air to make vacuum able and to move his dust and debris, thus housing his air/solids filter means separate from his debris and dust storage portion of the vacuum container would add a very large & costly appendage & extra duct work. **It was not obvious to Young to mount an air / solids filter housing means separate of the vacuum container.** By Young placing the air filters 84, dust work 77 and blower "B" within the dust & debris storage portion of his vacuum container, his design is incapable of dealing with heavy mud and large volumes of water because they would clog his air filter 84 and air / solids separation means and cause carry over of water and mud to the blower "B", air filter 84, duct work 77 and pick-up head "P".

25 Dust and trash are very light weight in comparison to a slurry of mud which is produced during water / vacuum excavation of earthen materials. A deep vacuum is required to lift a mud slurry. **Young's fan / blower 70-71 is disposed within his vacuum container (Fig 1,2 & 8).** Blower 70-71 would become a liquid pump if the vacuum container were filled with a liquid or slurry of mud. Again the teaching of Young is against using water. Young only
30 requires a minimal water supply for dust control, thus he used a small water container located in an independent isolated location.

35 **Applicant's vacuum excavation means, comprises a vacuum blower mounted external of the vacuum container. It does not use or teach disposing a vacuum producing means within the vacuum container.**

5 **Applicant's vacuum excavation invention comprises a vacuum container having a length and width, and being rigidly mounted at an inclined slope along said length of said container and sufficient to allow said solids or liquid to be emptied from said vacuum container by gravity through an access door to said vacuum container when said access door is opened along said width of said container.**

10 **Young does not teach a filter housing to house air filters, said filter housing *being congruently mounted at an incline slope to said vacuum container, along said length of said vacuum container and said filter housing* having a connecting conduit to flow air from said vacuum container to said filter housing.**

15 **Applicant's invention comprises a vacuum container, an access door to said vacuum container and a telescoping means disposed within said vacuum container with telescoping means to open & close said access door.** Young does not teach or illustrate a telescoping means disposed with a vacuum container. Young shows a hydraulic cylinder (7) mounted exterior to a vacuum container with lever arms (9) to open or close an access door to vacuum container SCB. Applicants invention overcomes the lever (9) obstacle and use of
20 a hydraulic cylinder means on either side of the access door by using one centrally located telescoping means disposed within the vacuum container. This facilitates an even balance of pressure when sealing an access door to a vacuum container filled with a liquid or mud slurry.

25 **As concerns claims 19-21, 23-25, 29 & 33**

Young teaches a power plant 74 as auxiliary equipment to his street sweeper. Young does not teach or suggest a boom arm means or auxiliary tool attachments.

In contrast, applicant's invention comprises an articulated boom arm means having a vacuum conduit, a water conduit, a hydraulic conduit, or an air conduit
30 **adjacently mounted and also having means to attach auxiliary tool.**

Applicant's invention comprises a water storage container having a liquid stored within it, and further comprising the step of a liquid pump means, a liquid conduit means and a nozzle means being mounted on said mobile vacuum excavation means, and further comprising the step of said liquid being pressurized by said liquid pump,
35 **flowed through said liquid conduit and nozzle means to impinge earthen material in order to improve the vacuum ability of said earthen material.**

5 **In contrast, Young teaches against the use of water except as a mist to settle dust.**

Applicant's invention further comprises the mobile vacuum excavation means having additional means consisting of a hydraulic reservoir, a hydraulic pump, a vacuum pump, an air filter, a water pump, a boom arm, a trailer, an engine, a hose reel, a jetter, a hydraulic connection for hydraulic tools, an air compressor, a generator, a process controller, a surface
10 cleaning tool, a jack hammer, a concrete saw, a solids liquid separator, a water filter, a water heater, a water purifier, a water sterilizer, a vibrating screen, a liquid recycling system, a hydrocarbon absorption system, a solids dispensing system, a air conveyor, a screw conveyor, a cyclone, a liquid dispensing system, a vibrator, an excavation bucket, a torque wrench, or a hydro-cyclone. Young does not teach, suggest, illustrate or attach the above
15 stated auxiliary tools or function.

Applicant's invention comprises a vacuum container, an access door to said vacuum container and a telescoping means disposed within said vacuum container with telescoping means to open & close said access door. Young does not teach or illustrate a telescoping means disposed with a vacuum container. Young shows a hydraulic cylinder (7) mounted
20 exterior to a vacuum container with lever arms (9) to open or close an access door to vacuum container SCB. Applicants invention overcomes the lever (9) obstacle and use of a hydraulic cylinder means on either side of the access door by using one centrally located telescoping means disposed within the vacuum container. This facilitates an even balance of pressure when sealing an access door to a vacuum container filled with a liquid or mud slurry.

25 **Novel Physical Features and unobvious results & problems solved:**

Applicants mobile vacuum excavation invention solves problems associated with storing, using, and vacuuming large volumes of water, as well as vacuuming the water / mud slurry without clogging air filters or getting the liquid or mud into the vacuum blower. It also solves problems associated with the excessive weight associated with storing large volumes
30 of useable water and storing large volumes of vacuumed mud. It also solves problems associated with separating solids from water so the water may be recycled. It also solves problems associated with having multiple independent functions spread out over a large platform with external interconnecting plumbing. Young's vacuum equipment is limited to vacuuming up dust, debris & surface dirt. **The novel physical features of applicant's**
35 **vacuum excavation invention over comes problems which limit the use of prior art vacuum equipment. Applicant's mobile vacuum excavation invention solves problems**

Young was unable to solve and did not address. The prior art of Young is complete and functional in itself, and lacks any suggestion that it should be modified in a manner required to meet applicant's claims.

Applicant's invention solves different problems than Young, and such difference in problems is recited in the claims. In re Wright, 6 USPQ 2d 1959 (1988).

The fact that those skilled in the art have not implemented the applicants invention, despite it's advantage as a vacuum excavation machine, and water utility maintenance machine indicates that its' physical characteristics are unobvious and that the results it achieves are unsuggested and are unusual.

“A claim is anticipated [under 35 USC 102 (b)] only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” Verdegaal Bros. vs. Union Oil Co. of California, 2 U.S.P.Q. 2d1051, 1053 (Fed. Cir. 1987), (emphasis added). See M.P.E.P. 2131.

Since the claims define novel structure that produces new and unexpected results as described above, applicant submits that claims 16-21,23-25,29 & 33 are in a condition of allowance.

Conditional Request for Constructive Assistance

Applicant has amended the claims of this application so that they are proper, definite, and define novel structure which is also unobvious. If, for any reason this application is not believed to be in full condition for allowance, applicant respectfully request the constructive assistance and suggestions of the Examiner pursuant to M.P.E.P. 2173.02 and 707.07(j) in order that the undersigned can place this application in allowable condition as soon as possible and without the need for further proceedings.

Respectfully submitted,

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